

## H1312

What is claimed is:

1. A method for partial coalescing transmit buffers comprising:  
obtaining a packet from host software, the packet comprising header information  
and data and being located in an array of buffers;  
selecting one or more buffers of the array of buffers to coalesce according to an  
initial fragment size; and  
copying the selected one or more buffers into a coalesced buffer.
2. The method of claim 1, further comprising assembling a coalesced array from the  
coalesced buffer and one or more non-selected buffers of the array of buffers.
3. The method of claim 1, wherein the initial fragment size is about 256 bytes.
4. The method of claim 3, wherein the selected buffers have a composite length less  
than the initial fragment size.
5. The method of claim 1, wherein the array of buffers comprises physical buffers  
respectively having a size and physical address.
6. The method of claim 1, wherein the array of buffers comprises virtual buffers  
respectively having a size and a virtual address.
7. The method of claim 2, further comprising transmitting the coalesced array on a  
network.
8. The method of claim 1, wherein selecting the one or more buffers comprises  
iteratively analyzing, in order, each buffer of the array to select buffers of the array such  
that their composite size is less than about the initial fragment size.
9. The method of claim 1, wherein selecting the one or more buffers comprises  
performing the following beginning with a first buffer of the array:

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obtaining a size for a current buffer;  
computing a composite size as a function of the current buffer size and a  
composite buffer length; and  
on the composite size being less than the initial fragment size, selecting the  
current buffer and adding the current size to the composite buffer length.

10. The method of claim 1, further comprising determining the initial fragment size  
according to a desired overall system performance.

11. The method of claim 1, further comprising determining the initial fragment size  
according to a desired network throughput.

12. The method of claim 1, further comprising determining the initial fragment size  
according to a desired overall system performance, network throughput, and system  
resource utilization.

13. A method for partial coalescing transmit buffers comprising:  
receiving an array of virtual buffers containing header information and data for a  
packet;

mapping buffers of the array of virtual buffers to an array of physical buffers,  
wherein one or more of the physical buffers are associated with each of the virtual  
buffers;

analyzing the array of virtual buffers and the array of physical buffers for  
individual buffer sizes;

on one or more of the virtual buffers having a size greater than one or more  
associated physical buffers, selectively coalescing an initial number of buffers of the  
array of virtual buffers into a coalesced buffer; and

on one or more of the virtual buffers not having a size greater than one or more  
associated physical buffers, selectively coalescing an initial number of buffers of the  
array of physical buffers into the coalesced buffer.

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14. The method of claim 13, further comprising forming a coalesced array from the coalesced buffer and non-coalesced buffers of the array of physical buffers.

15. The method of claim 14, further comprising passing the coalesced array to a network device for transmission.

16. The method of claim 13, wherein the initial number of selected buffers to coalesce depends on an initial fragment size.

17. The method of claim 13, wherein the coalesced buffer has a physical memory size and a physical address.

18. The method of claim 13, wherein the array of virtual buffers is received from host software.

19. A network system comprising:

a network medium;

a host memory that includes buffers to store receive frames and transmit frames

a network device that transmits the transmit frames from the host memory to the network medium and that receives receive frames from the network and stores in the host memory; and

a device driver that processes the received frames and the transmit frames and that partially coalesces buffers of the host memory employed for the transmit frames according to an initial fragment size.

20. The system of claim 19, further comprising host software that initially generates the transmit frames and places header information and data related to the transmit frames into buffers of the host memory.

21. The system of claim 19, wherein the buffers include virtual and physical buffers.